

## WEST Search History

DATE: Friday, October 29, 2004

Hide?	Set Name	Query	Hit Count
		<i>DB=USPT,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR</i>	
<input type="checkbox"/>	L5	L4 and amphoteric	1
<input type="checkbox"/>	L4	liposome adj3 stearylamine	43
<input type="checkbox"/>	L3	cationic adj1 liposome	1892
<input type="checkbox"/>	L2	L1 and 424/450.ccls.	9
<input type="checkbox"/>	L1	chems adj5 liposome	44

END OF SEARCH HISTORY

[First Hit](#) [Fwd Refs](#)[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

Generate Collection

Print

L2: Entry 2 of 9

File: USPT

Sep 21, 1999

DOCUMENT-IDENTIFIER: US 5955365 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Self-assembling polynucleotide delivery system

Detailed Description Text (80):

We have compared Lipofectin.TM. to a pH-sensitive cholesterylhemisuccinate (Chems)/phosphatidylethanolamine (PE) liposome composition and to gramicidin S/dioleoylphosphatidylethanolamine (DOPE)/DNA complexes for the delivery and expression of DNA in mammalian cells. Plasmids containing strong promoters and either firefly luciferase or .beta. galactosidase were used as indicators for gene transfer.

Detailed Description Text (86):

Plasmid encapsulation efficiency was determined after separation of encapsulated from non-encapsulated plasmid on Ficoll gradients. About 22.+-.3% of the total DNA added was encapsulated. Liposome diameters, measured by dynamic light scattering, were 372.+-.38 nm, 295.+-.65 nm and 464.+-.20 nm for DOPE/CHEMS, DOPC/CHEMS and PS/Chol liposomes respectively (results are the mean.+-.SD of three independent light scattering determinations).

Current US Cross Reference Classification (1):

424/450

[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

[First Hit](#) [Fwd Refs](#)[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

Generate Collection

Print

L2: Entry 3 of 9

File: USPT

Jun 1, 1999

DOCUMENT-IDENTIFIER: US 5908777 A

TITLE: Lipidic vector for nucleic acid delivery

Detailed Description Text (30):

DNA/polylysine (1:0.75) complex became spontaneously encapsulated when rapidly mixed with DOPE/CHEMS (6:4) liposomes. The size of the DNA-containing liposome was dependent on the charge ratio between the DNA/polylysine complex and the anionic liposomes (FIG. 3). When the overall charge was close to neutral, the size of the particles increased over time due to aggregation. A similar charge/size relationship was observed when 0.1 mole % folate-PEG-PE was included in the anionic liposomes during the preparation of folate-targeted liposomes. In order to compare the liposome preparations described above with standard preparations, a cationic liposome DNA/DC-chol complex was prepared according to Gao and Huang, Biochem. Biophys. Res. Comm. 179: 280-85 (1991). Its activity was deemed optimum when prepared at a ratio of 1 .mu.g:10 nM of DNA to liposome.

Detailed Description Text (39):

By use of these DNA-containing liposomes, similar transfection results also were obtained in HeLa, 2008, BL6, CHO and EL4 cells and T-lymphocytes; a suspension of cultured T-lymphocytes was not transfectable with the cationic liposome DNA/DC-chol complex. Acceptable but slightly lower transfection activity in CHO cells also was obtained when liposomes containing DOPE/phosphatidylserine (8:2), a pH-insensitive anionic lipid composition, were used in place of DOPE/CHEMS liposomes.

Current US Cross Reference Classification (2):

424/450

[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

[First Hit](#) [Fwd Refs](#)[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

Generate Collection

Print

L2: Entry 7 of 9

File: USPT

Mar 22, 1994

DOCUMENT-IDENTIFIER: US 5296231 A

TITLE: Purification and administration of DNA repair enzymes

Detailed Description Text (18):

The examples presented below illustrate two particular methods for producing pH sensitive liposomes. First, the combination of phosphatidylethanolamine and cholesteryl hemisuccinate (CHEMS) in the lipid membrane destabilizes the liposome at a pH of less than 4.5, as described by Joe Bentz, Harma Ellens and Francis Szoka in their paper entitled "Destabilization of Phosphatidylethanolamine-Containing Liposomes: Hexagonal Phase and Asymmetric Membranes", referred to above. This paper measured destabilization by a lowering in the phase transition temperature or by the leakage of one liposome in the presence of another liposome of different composition. See also Harma Ellens, Joe Bentz and Francis C. Szoka, "pH-Induced destabilization of phosphatidylethanolamine-containing liposomes: role of bilayer contact," referred to above. Second, the inclusion of oleic acid with phosphatidylethanolamine also destabilizes the lipid bilayer at a pH of less than 6.5, and imparts a net negative charge to the liposome at neutral pH, as discussed in "pH-Sensitive Liposomes Mediate Cytoplasmic Delivery of Encapsulated Macromolecules" by Robert Straubinger, Nejat Duzgunes and Demetrios Papahadjopoulos, referred to above.

Detailed Description Text (19):

The examples also illustrate that liposomes composed of a mixture of phosphatidylcholine and phosphatidylethanolamine are more pH sensitive than those composed of phosphatidylethanolamine alone. Further, liposomes in which the molar ratio of CHEMS to the remaining components of the liposome is about 1:1 were found to respond to pH changes faster than liposomes containing lesser amounts of CHEMS, e.g., 20 minutes versus three hours. Accordingly, a preferred composition for the pH sensitive liposomes is phosphatidylethanolamine, phosphatidylcholine, oleic acid, and cholesteryl hemisuccinate (PE/PC/OA/CHEMS) in a molar ratio of 2:2:1:5. Of course, other compositions for producing pH sensitive liposomes now known or subsequently developed can be used in the practice of the invention.

Detailed Description Text (100):

The remaining biological assays in this example used PE/PC/OA/CHEMS liposomes at a molar ratio of 2:2:1:5.

Detailed Description Paragraph Table (7):

TABLE 7		PE/PC/OA/CHEMS Liposomes (2:2:1:5)									
Endo	V ug/ml	Percent control	repair	replication							
		none	100%	0.01	142	0.10	166	0.25	165	0.50	
169	1.00	156									

Current US Original Classification (1):

424/450

[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

[First Hit](#)   [Fwd Refs](#)   [Previous Doc](#)   [Next Doc](#)   [Go to Doc#](#)

☐ [Generate Collection](#)   [Print](#)

L4: Entry 20 of 43

File: USPT

Oct 5, 1999

US-PAT-NO: 5962015

DOCUMENT-IDENTIFIER: US 5962015 A

TITLE: Stabilized liposomes

DATE-ISSUED: October 5, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Delrieu; Pascal	Castanet Tolosan			FR
Ding; Li	Castanet Tolosan			FR

US-CL-CURRENT: 424/450; 424/401

CLAIMS:

We claim:

1. A method of encapsulating a high proportion of water soluble active agent in liposomes comprising mixing together:

- a) a liposome-forming structural material;
- b) an effective proportion of a quaternized polysaccharide stabilizing agent; and
- c) an effective proportion of a water-soluble active ingredient dissolved in sufficient of an aqueous medium to provide a dispersion medium for the liposomes;

and homogenizing the mixture to form liposomes wherein the quaternized polysaccharide agent is present in the liposomal membrane, providing support to the liposome-forming material to hold the liposome together and wherein the dissolved active ingredient is encapsulated in the liposomes.

2. A stabilized, aqueous dispersion of liposomes wherein the liposomes comprise, as structural components of individual liposomes:

- a) an amphiphilic liposome-forming material; and
- b) a sufficient proportion of a quaternized polysaccharide stabilizing agent to stabilize the liposome dispersion against agglomeration;

wherein the quaternized polysaccharide agent is present in the liposomal membrane and provides support to the liposome-forming material to hold the liposome together.

3. A dispersion of liposomes according to claim 2 wherein the stabilizing agent comprises a quaternized cellulose having an average molecular weight of at least 50,000 daltons, the quaternary group having an alkyl substituent of from 10 to 20 carbon atoms.
4. A dispersion of liposomes according to claim 2 wherein the quaternized cellulose has a degree of substitution of quaternary ammonium groups per saccharide unit of at least 0.5.
5. A dispersion of liposomes according to claim 2 wherein the quaternized polysaccharide comprises laurdimonium hydroxyethylcellulose, cocodimonium hydroxyethylcellulose or steardimonium hydroxyethylcellulose.
6. A dispersion of liposomes according to claim 2 wherein the proportion of quaternized polysaccharide to liposomes is from about 0.01 to about 0.5 parts polysaccharide per part of liposome, by weight.
7. A dispersion of liposomes according to claim 2 wherein the proportion of quaternized polysaccharide to liposomes is from about 0.05 to about 0.2 parts polysaccharide per part of liposome, by weight.
8. A dispersion of liposomes according to claim 2 wherein the amphiphilic liposome-forming material comprises a liposome membrane-forming lecithin.
9. A dispersion of liposomes according to claim 2 wherein the liposomes comprise from about 0.5 to 10 percent by weight of the composition.
10. A dispersion of liposomes according to claim 2 wherein the individual liposomes contain an aqueous solution of a cosmetically or biologically active ingredient.
11. A dispersion of liposomes according to claim 10 wherein the active ingredient is acidic.
12. A dispersion of liposomes according to claim 2 wherein the quaternized polysaccharide comprises laurdimonium hydroxyethylcellulose, cocodimonium hydroxyethylcellulose or steardimonium hydroxyethylcellulose, the proportion of quaternized polysaccharide to liposomes is from about 0.01 to about 0.5 parts polysaccharide per part of liposome, by weight, wherein the amphiphilic liposome-forming material comprises a liposome membrane-forming amphiphilic lecithin in a proportion of from about 0.5 to 10 percent by weight of the composition and wherein the individual liposomes contain an aqueous solution of an acidic cosmetically or biologically active ingredient.
13. A dispersion of liposomes according to claim 2 having a stability such that they exhibit a size increase of less than 20 percent after 60 days at 40.degree. C. and are substantially stable for at least 180 minutes at 80.degree. C.
14. A dispersion of liposomes according to claim 2 being stable to an acidic pH of at least as low as 4.5.
15. A cosmetic or pharmaceutical composition comprising an effective amount of a liposome composition according to claim 2, said liposome composition comprising an effective amount of an active ingredient.

16. A dispersion of liposomes according to claim 2 comprising:

- a) an aqueous medium;
- b) liposomes dispersed in the aqueous medium; and
- c) sufficient of a water-soluble quaternized polymer stabilizing agent to stabilize the liposomes against agglomeration the polymer having repeating units of the following general structure:

--[(backbone moiety).(O--R--OH).sub.2.(OR).sub.a R.sub.1 N.sup.+  
R.sub.2.R.sub.3.R.sub.4 X.sup.- ]--

wherein the backbone moiety is a unit of a polycarbohydrate, a polysaccharide, a vinyl alcohol polymer, or a copolymer of vinyl alcohol with vinyl acetate; R is methylene, ethylene, or propylene; R.sub.1 -R.sub.4 are hydrogen or alkyl groups having from 1 to 20 carbon atoms, at least one of which is alkyl; where a is from 0 to 20; and X.sup.- is an anion; wherein the degree of substitution of the hydroxy alkylene group per saccharide unit is at least 1.0; and the degree of substitution of the quaternary ammonium group per saccharide unit is at least about 0.5.

17. A dispersion of liposomes according to claim 2 wherein the liposome membrane forming compound has lipophilic portions and the stabilizing agent has sufficient lipophilic groups to anchor the lipophilic portions of the liposome membrane forming compound.

18. A dispersion of liposomes according to claim 2 exhibiting one or more of the following stability characteristics:

- i) an optically determined size increase of less than about 20 percent after 60 days at about 40.degree. C.;
- ii) an optical density increase of not more than 10 percent after 180 minutes at 80.degree. C.;
- iii) size stability to agitation for five minutes at a pH of 4.5;
- iv) size stability to 20 percent ethanol based upon the water content of the liposome dispersion; and
- v) size stability to 10 percent of a non-ionic surfactant based upon the water content of the liposome dispersion.

19. A dispersion of liposomes according to claim 2 having a stability providing an optical density increase of not more than 10 percent after 180 minutes at 80.degree. C. and size stability to agitation for five minutes at a pH of 4.5.

20. A dispersion of liposomes according to claim 19 having size stability to agitation for five minutes at a pH of 2.

21. A dispersion of liposomes according to claim 20 wherein the liposome-forming material is a lecithin and the stabilizing agent is an acylated quaternized polysaccharide.

22. A dispersion of liposomes according to claim 2 wherein the stabilizing agent provides each individual liposome with an external positive charge whereby neighboring liposomes tend to repel one another.

23. A method according to claim 1 wherein the stabilizing agent comprises a quaternized cellulose having an average molecular weight of at least 50,000 daltons, the quaternary group having an alkyl substituent of from 10 to 20 carbon atoms.

24. A method according to claim 1 wherein the proportion of stabilizing agent to liposomes is from about 0.01 to about 0.5 parts polysaccharide per part of liposome, by weight.

25. A method according to claim 1 wherein an aqueous solution of a cosmetically or biologically active ingredient is entrapped within the liposome particles.

[Previous Doc](#)

[Next Doc](#)

[Go to Doc#](#)



[First Hit](#) [Fwd Refs](#)[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

Generate Collection

Print

L4: Entry 24 of 43

File: USPT

Jul 7, 1998

US-PAT-NO: 5776488

DOCUMENT-IDENTIFIER: US 5776488 A

TITLE: Liposome preparation

DATE-ISSUED: July 7, 1998

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mori; Yoshiyuki	Chikujo-gun			JP
Sagara; Kazuyoshi	Chikujo-gun			JP
Mizuta; Hiroaki	Chikujo-gun			JP
Fujii; Akihiro	Iruma			JP

US-CL-CURRENT: 424/450

## CLAIMS:

What is claimed is:

## 1. A liposome preparation which comprises

(a) a liposome having an average particle size 50 to 200 nm and composed of a phospholipid selected from the group consisting of hydrogenated purified egg yolk phosphatidylcholine, hydrogenated purified soy bean phosphatidylcholine, dipalmitoylphosphatidylcholine and distearoylphosphatidylcholine, said liposome having encapsulated therein a water-soluble 2'-deoxycytidine compound,

(b) 0.02-0.4 moles of stearylamine per mole of the phospholipid which positively charges the surface of the lipid membrane, and

(c) 0.6-1 mole of a sterol per mole of the phospholipid as a stabilizer.

2. The liposome preparation of claim 1, wherein the 2'deoxycytidine compound is selected from the group consisting of 2'deoxy-2'-methylidenecytidine, 2'-deoxy-2'-fluoromethylidenecytidine, 2'-deoxy-2'-methylidene-5-fluorocytidine, 2'-deoxy-2',2'-difluorocytidine and 2'-C-cyano-2'-deoxy-.beta.-arabinofranosylcytosine, and pharmaceutically acceptable salts and hydrates thereof.

3. The liposome preparation of claim 1, wherein the 2'deoxycytidine compound is selected from the group consisting of 2'deoxy-2'-methylidenecytidine and 2'-deoxy-2'-methylidene-5fluorocytidine, and pharmaceutically acceptable salts and hydrates thereof.

4. The liposome preparation of claim 1, wherein the 2'-deoxycytidine compound

is 2'-deoxy-2'-methylidenecytidine dihydrate.

5. The liposome preparation of claim 1, wherein the liposome is composed of a phospholipid selected from the group consisting of hydrogenated purified soy bean phosphatidylcholine and dipalmitoylphosphatidylcholine.

6. The liposome preparation of claim 1, wherein the liposome is composed of hydrogenated purified soy bean phosphatidylcholine.

7. The liposome preparation of claim 1, wherein the stabilizer is cholesterol.

8. The liposome preparation of claim 1, wherein the liposome has an average particle size of 100-180 nm.

9. The liposome preparation of claim 1, wherein the liposome has an average particle size of 120-160 nm.

10. The liposome preparation of claim 1, wherein the liposome has an average particle size of 150-160 nm.

11. A liposome preparation comprising a water-soluble 2'-deoxycytidine dihydrate encapsulated therein, wherein the surface of the lipid membrane is positively charged, and the liposome is composed of 0.02-0.4 mole of stearylamine or sphingosine and 0.6-1 mole of cholesterol per mole of a phospholipid selected from the group consisting of hydrogenated purified soy bean phosphatidylcholine and dipalmitoylphosphatidylcholine, and has an average particle size of 50-200 nm.

12. A liposome preparation comprising a water-soluble 2'-deoxycytidine dihydrate encapsulated therein, wherein the surface of the lipid membrane is positively charged, and the liposome consists of 0.02-0.4 mole of stearylamine and 0.6-1 mole of cholesterol per mole of a phospholipid selected from the group consisting of hydrogenated purified soy bean phosphatidylcholine and dipalmitoylphosphatidylcholine and has an average particle size of 120-160 nm.

13. The liposome preparation of claim 1, wherein the stearylamine which positively charges the surface of the lipid membrane is contained in a proportion of 0.02-0.1 per mole of the phospholipid-lipid.

[Previous Doc](#)

[Next Doc](#)

[Go to Doc#](#)

[First Hit](#) [Fwd Refs](#)[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

Generate Collection

Print

L4: Entry 41 of 43

File: USPT

Jul 8, 1986

DOCUMENT-IDENTIFIER: US 4599227 A

TITLE: Injectable pharmaceutical preparation for the induction of multiple follicular growth

## CLAIMS:

2. The pharmaceutical preparation of claim 1 wherein the liposomes include phosphatidylcholine and stearylamine.

7. The pharmaceutical preparation of claim 6 wherein the liposomes include phosphatidylcholine and stearylamine.

12. The pharmaceutical preparation of claim 11 wherein the liposomes include phosphatidylcholine and stearylamine.

[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

[First Hit](#) [Fwd Refs](#)[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

Generate Collection

Print

L2: Entry 1 of 6

File: USPT

Jun 3, 2003

DOCUMENT-IDENTIFIER: US 6572888 B2

TITLE: Controlled release lipoic acid

Detailed Description Text (55):

Alternate carriers include phosphatidylcholine. Makiko Fujii, et al., The Properties of Solid Dispersions of Indomethacin Ketoprofen and Flurbiprofen in Phosphatidylcholine, Chem. Pharm. Bull. 36:2186-2192 (1988). Phosphatidylcholine is an amphoteric but water-insoluble lipid, which may improve the solubility of otherwise insoluble lipoates in an amorphous state in phosphatidylcholine solid dispersions. See Makiko Fujii, et al., Dissolution of Bioavailability of Phenytoin in Solid Dispersion with Phosphatidylcholine, Chem. Pharm. Bull 36:4908-4913 (1988).

[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

## WEST Search History

DATE: Friday, October 29, 2004

Hide?	Set Name	Query	Hit Count
		<i>DB=USPT,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR</i>	
<input type="checkbox"/>	L2	phosphatidylcholine adj5 amphoteric	6
<input type="checkbox"/>	L1	phospholipids adj5 amphoteric	34

END OF SEARCH HISTORY

## WEST Search History

DATE: Friday, October 29, 2004

<u>Hide?</u>	<u>Set Name</u>	<u>Query</u>	<u>Hit Count</u>
	<i>DB=USPT,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR</i>		
<input type="checkbox"/>	L5	amphoteric same liposome	65
<input type="checkbox"/>	L4	(isoelectric adj1 point) adj10 liposome	10
<input type="checkbox"/>	L3	amphoteric adj10 liposome	8
<input type="checkbox"/>	L2	amphoteric adj5 liposome	6
<input type="checkbox"/>	L1	amphoteric\$ adj5 liposome	77

END OF SEARCH HISTORY

## WEST Search History

DATE: Friday, October 29, 2004

Hide?	Set Name	Query	Hit Count
		<i>DB=USPT,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR</i>	
<input type="checkbox"/>	L2	\$hemisuccinate adj10 dotap	13
<input type="checkbox"/>	L1	chems adj10 dotap	7

END OF SEARCH HISTORY

## Hit List

Clear	Generate Collection	Print	Fwd Refs	Bkwd Refs
Generate OACS				

Search Results - Record(s) 1 through 6 of 6 returned.

☐ 1. Document ID: WO 3070735 A2

Using default format because multiple data bases are involved.

L2: Entry 1 of 6

File: EPAB

Aug 28, 2003

PUB-NO: WO003070735A2

DOCUMENT-IDENTIFIER: WO 3070735 A2

TITLE: COMPONENTS FOR PRODUCING AMPHOTERIC LIPOSOMES

PUBN-DATE: August 28, 2003

INVENTOR-INFORMATION:

NAME	COUNTRY
ESSLER, FRANK	DE
PANZNER, STEFFEN	DE
ENDERT, GEROLD	DE

INT-CL (IPC): C07 F 9/6506; C07 K 5/062; C07 K 5/078; C07 K 5/09; C07 C 229/16; C07 D 233/64; A61 K 9/127; C12 N 15/88

EUR-CL (EPC): A61K009/127; A61K009/127, C07D233/54 , C07F009/6506 , C12N015/88

Full	Title	Citation	Front	Review	Classification	Date	Reference	References	Attachments	Claims	KWIC	Draw. De
------	-------	----------	-------	--------	----------------	------	-----------	------------	-------------	--------	------	----------

☐ 2. Document ID: WO 2066012 A2

L2: Entry 2 of 6

File: EPAB

Aug 29, 2002

PUB-NO: WO002066012A2

DOCUMENT-IDENTIFIER: WO 2066012 A2

TITLE: AMPHOTERIC LIPOSOMES AND THE USE THEREOF

PUBN-DATE: August 29, 2002

INVENTOR-INFORMATION:

NAME	COUNTRY
PANZNER, STEFFEN	DE
FANKHAENEL, STEFAN	DE
ESSLER, FRANK	DE
PANZNER, CORNELIA	DE

INT-CL (IPC): A61 K 9/127

EUR-CL (EPC): A61K009/127



Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachment	Claims	KMC	Draw D
------	-------	----------	-------	--------	----------------	------	-----------	----------	------------	--------	-----	--------

☐ 3. Document ID: AU 2003215567 A1, WO 2003070735 A2, DE 10207178 A1

L2: Entry 3 of 6

File: DWPI

Sep 9, 2003

DERWENT-ACC-NO: 2003-697598

DERWENT-WEEK: 200427

COPYRIGHT 2004 DERWENT INFORMATION LTD

TITLE: New lipids based on amphiphilic residues bonded to amphoteric head groups, used for production of liposomes used e.g. in drug transport or release or especially in vivo transfection systems

INVENTOR: ENDERT, G; ESSLER, F ; PANZNER, S

PRIORITY-DATA: 2002DE-1007178 (February 19, 2002)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>AU 2003215567 A1</u>	September 9, 2003		000	C07F009/6506
<u>WO 2003070735 A2</u>	August 28, 2003	G	056	C07F009/6506
<u>DE 10207178 A1</u>	September 4, 2003		000	C07D233/64

INT-CL (IPC): A61 K 9/127; A61 K 9/1277; C07 C 229/16; C07 C 229/166; C07 D 233/64; C07 D 233/644; C07 D 239/24; C07 D 241/00; C07 D 265/28; C07 D 473/00; C07 F 9/6506; C07 K 5/062; C07 K 5/0622; C07 K 5/078; C07 K 5/0788; C07 K 5/09; C07 K 5/099; C12 N 15/88; C12 N 15/888

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachment	Claims	KMC	Draw D
------	-------	----------	-------	--------	----------------	------	-----------	----------	------------	--------	-----	--------

☐ 4. Document ID: JP 2004525898 W, WO 200266012 A2, DE 10109897 A1, US 20030099697 A1, EP 1363601 A2, BR 200207775 A, AU 2002234643 A1, CN 1492756 A

L2: Entry 4 of 6

File: DWPI

Aug 26, 2004

DERWENT-ACC-NO: 2002-713334

DERWENT-WEEK: 200456

COPYRIGHT 2004 DERWENT INFORMATION LTD

TITLE: Amphoteric liposomes used e.g. for release of therapeutic or diagnostic reagents and for transfection, include oppositely charged or amphoteric charge carriers

INVENTOR: ESSLER, F; FANKHANEL, S ; PANZNER, C ; PANZNER, S ; FANKHAENEL, S ; ENDERT, G

PRIORITY-DATA: 2001DE-1009897 (February 21, 2001)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>JP 2004525898 W</u>	August 26, 2004		063	A61K009/127

<u>WO 200266012 A2</u>	August 29, 2002	G	038	A61K009/127
<u>DE 10109897 A1</u>	November 7, 2002		000	A61K009/127
<u>US 20030099697 A1</u>	May 29, 2003		000	A61K009/127
<u>EP 1363601 A2</u>	November 26, 2003	G	000	A61K009/127
<u>BR 200207775 A</u>	March 30, 2004		000	A61K009/127
<u>AU 2002234643 A1</u>	September 4, 2002		000	A61K009/127
<u>CN 1492756 A</u>	April 28, 2004		000	A61K009/127

INT-CL (IPC): A61 K 9/127; A61 K 9/51; A61 K 31/7052; A61 K 31/7105; A61 K 31/711; A61 K 38/00; A61 K 47/14; A61 K 47/18; A61 K 47/24; A61 K 47/28; A61 P 35/00; C12 N 15/09

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	KWIC	Draw. Data
------	-------	----------	-------	--------	----------------	------	-----------	----------	-------------	--------	------	------------

☐ 5. Document ID: JP 2004521917 W, WO 200266489 A2, DE 10109898 A1, EP 1363932 A2, BR 200207776 A, AU 2002302364 A1, US 20040120997 A1, CN 1492876 A

L2: Entry 5 of 6

File: DWPI

Jul 22, 2004

DERWENT-ACC-NO: 2002-600095

DERWENT-WEEK: 200448

COPYRIGHT 2004 DERWENT INFORMATION LTD

TITLE: New amphoteric sterol derivatives useful as components of liposomes for pharmaceutical, diagnostic and biotechnological application

INVENTOR: EL-MOKDAD, N; ENDERT, G ; FANKHANEL, S ; PANZNER, S ; FANKHAENEL, S

PRIORITY-DATA: 2001DE-1009898 (February 21, 2001)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>JP 2004521917 W</u>	July 22, 2004		065	C07J043/00
<u>WO 200266489 A2</u>	August 29, 2002	G	034	C07J001/00
<u>DE 10109898 A1</u>	September 5, 2002		000	C07J009/00
<u>EP 1363932 A2</u>	November 26, 2003	G	000	C07J041/00
<u>BR 200207776 A</u>	March 23, 2004		000	C07J001/00
<u>AU 2002302364 A1</u>	September 4, 2002		000	C07J001/00
<u>US 20040120997 A1</u>	June 24, 2004		000	C07J043/00
<u>CN 1492876 A</u>	April 28, 2004		000	C07J041/00

INT-CL (IPC): A61 K 9/127; A61 K 31/58; A61 K 38/00; A61 K 47/24; A61 K 47/28; A61 K 48/00; C07 J 1/00; C07 J 3/00; C07 J 7/00; C07 J 9/00; C07 J 41/00; C07 J 43/00

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	KWIC	Draw. Data
------	-------	----------	-------	--------	----------------	------	-----------	----------	-------------	--------	------	------------

☐ 6. Document ID: EP 626167 A2, EP 626167 A3, DE 4317780 A1, DE 4317780 C2

L2: Entry 6 of 6

File: DWPI

Nov 30, 1994

DERWENT-ACC-NO: 1995-000734

DERWENT-WEEK: 199617

COPYRIGHT 2004 DERWENT INFORMATION LTD

TITLE: Foam compsns. for skin protection based on aq. emulsion - contain fatty acid ester, polyhydric alcohol, emulsifier and surfactant

INVENTOR: GUCK, F

PRIORITY-DATA: 1993DE-4317780 (May 28, 1993)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>EP 626167 A2</u>	November 30, 1994	G	004	A61K007/40
<u>EP 626167 A3</u>	October 25, 1995		000	A61K007/40
<u>DE 4317780 A1</u>	December 1, 1994		000	
<u>DE 4317780 C2</u>	September 28, 1995		003	A61K007/40

INT-CL (IPC): A61 K 7/40; A61 K 7/48

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Writing	Claims	KMIC	Draw De
------	-------	----------	-------	--------	----------------	------	-----------	----------	---------	--------	------	---------

Clear	Generate Collection	Print	Fwd Refs	Bkwd Refs	Generate OACS
-------	---------------------	-------	----------	-----------	---------------

Terms	Documents
amphoteric adj5 liposome	6

Display Format:

Change Format

[Previous Page](#)[Next Page](#)[Go to Doc#](#)

[First Hit](#) [Fwd Refs](#)[Previous Doc](#) [Next Doc](#) [Go to Doc#](#)

Generate Collection

Print

L3: Entry 2 of 8

File: USPT

May 18, 1976

DOCUMENT-IDENTIFIER: US 3957971 A

TITLE: Moisturizing units and moisturizing compositions containing the same

Brief Summary Text (36):

As demonstrated in Example 13 below, the amphoteric and anionic detergents are suitable for use in the shampoos useful as a cosmetically acceptable vehicle for applying the liposomes to the hair. Suitable amphoteric detergents include N-lauryl-N'-carboxymethyl-N'-(2-hydroxyethyl)ethylenediamine, coco-beta-alanine, the alkali-metal salts of protein-coconut fatty acid condensates, aminopropionates such as alkyl beta-iminodipropionates represented by  $RN(CH_2CH_2COOM)_2$  and alkyl beta-iminopropionates represented by the formula  $RNHCH_2CH_2COOM$ , wherein R is an aliphatic hydrocarbon radical having about 8 to about 18 carbon atoms and M is a cation to neutralize the charge on the anion and to render the detergent compound water soluble. Suitable anionic detergents are the water-soluble anionic sulfate, sulfonate and carboxylate foaming detergents mentioned in the literature, such as the texts "Surface Active Agents" by Schwartz and Perry, and "Surface Active Agents and Detergents" by Swartz, Perry and Berch, both Interscience Publishers, New York, the disclosures of which are incorporated herein by reference.

Detailed Description Text (31):

This example shows the effect of a representative amphoteric, anionic, nonionic, and quaternary ammonium surfactant on the barrier properties of the lipid matrix of the liposomes within the invention.

[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

[First Hit](#) [Fwd Refs](#)[Previous Doc](#) [Next Doc](#) [Go to Doc#](#)

Generate Collection

Print

L4: Entry 2 of 10

File: USPT

Mar 1, 1994

DOCUMENT-IDENTIFIER: US 5290563 A

TITLE: Method for combining a mixture of heterogeneous substances with liposomes

## CLAIMS:

1. A method of combining protidic allergens and/or allergenic extracts selected from the group consisting of natural allergens from animal or vegetable origin, allergenic proteins and peptides, with a negatively or positively charged liposome comprised of cholesterol, a phospholipid and/or at least one ionic lipid which gives the liposome a positive or negative charge, comprising

a) determining the isoelectric point ip of one or more of the allergenic substances to be mixed and

b) mixing said allergenic substance or substances with said liposome at a pH lower than said isoelectric point when the liposome is negatively charged or at a pH higher than said isoelectric point when said liposome is positively charged.

[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

## Hit List

Clear	Generate Collection	Print	Fwd Refs	Bkwd Refs
Generate OACS				

Search Results - Record(s) 1 through 10 of 10 returned.

☐ 1. Document ID: US 5897873 A

Using default format because multiple data bases are involved.

L4: Entry 1 of 10

File: USPT

Apr 27, 1999

US-PAT-NO: 5897873

DOCUMENT-IDENTIFIER: US 5897873 A

TITLE: Affinity associated vaccine

DATE-ISSUED: April 27, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Popescu; Mircea	Plainsboro	NJ		

US-CL-CURRENT: 424/450; 424/204.1, 424/206.1, 424/208.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	--------

☐ 2. Document ID: US 5290563 A

L4: Entry 2 of 10

File: USPT

Mar 1, 1994

US-PAT-NO: 5290563

DOCUMENT-IDENTIFIER: US 5290563 A

TITLE: Method for combining a mixture of heterogeneous substances with liposomes

DATE-ISSUED: March 1, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Millet-Genin; Isabelle	Plaisir			FR
Puisieux; Francis	Maisons Alfort			FR
Thao; Tran X.	Chatenay Malabry			FR
Roblot-Treupel; Liliane	Thiais			FR

US-CL-CURRENT: 424/450; 264/4.1, 264/4.3, 424/275.1, 424/812, 436/829

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	--------

☐ 3. Document ID: US 5064655 A

L4: Entry 3 of 10

File: USPT

Nov 12, 1991

US-PAT-NO: 5064655

DOCUMENT-IDENTIFIER: US 5064655 A

TITLE: Liposome gel composition and method

DATE-ISSUED: November 12, 1991

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Uster; Paul S.	Palo Alto	CA		
Morano; Jacqueline K.	Mountain View	CA		
Martin; Francis J.	San Francisco	CA		

US-CL-CURRENT: 424/450; 264/4.3, 428/402.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw D
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	-----	--------

☐ 4. Document ID: US 4944948 A

L4: Entry 4 of 10

File: USPT

Jul 31, 1990

US-PAT-NO: 4944948

DOCUMENT-IDENTIFIER: US 4944948 A

**\*\* See image for Certificate of Correction \*\***

TITLE: EGF/Liposome gel composition and method

DATE-ISSUED: July 31, 1990

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Uster; Paul S.	Palo Alto	CA		
Fielding; Robert M.	Redwood City	CA		
Martin; Francis J.	San Francisco	CA		

US-CL-CURRENT: 424/450; 264/4.3, 424/1.21

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw D
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	-----	--------

☐ 5. Document ID: US 4596788 A

L4: Entry 5 of 10

File: USPT

Jun 24, 1986

US-PAT-NO: 4596788

DOCUMENT-IDENTIFIER: US 4596788 A

TITLE: Gelatin and lecithin based synthetic whole blood and a method of making the same

DATE-ISSUED: June 24, 1986

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ecanow; Charles S.	Skokie	IL		
Ecanow; Bernard	Wilmette	IL		

US-CL-CURRENT: 514/2; 514/78

Full	Title	Citation	Front	Review	Classification	Date	Reference	References	Attachments	Claims	KWC	Draw. De
------	-------	----------	-------	--------	----------------	------	-----------	------------	-------------	--------	-----	----------

☐ 6. Document ID: US 4539204 A

L4: Entry 6 of 10

File: USPT

Sep 3, 1985

US-PAT-NO: 4539204

DOCUMENT-IDENTIFIER: US 4539204 A

TITLE: Gelatin based synthetic blood and a method of making the same

DATE-ISSUED: September 3, 1985

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ecanow; Charles S.	Skokie	IL		
Ecanow; Bernard	Wilmette	IL		

US-CL-CURRENT: 514/6; 514/832

Full	Title	Citation	Front	Review	Classification	Date	Reference	References	Attachments	Claims	KWC	Draw. De
------	-------	----------	-------	--------	----------------	------	-----------	------------	-------------	--------	-----	----------

☐ 7. Document ID: JP 08254533 A

L4: Entry 7 of 10

File: JPAB

Oct 1, 1996

PUB-NO: JP408254533A

DOCUMENT-IDENTIFIER: JP 08254533 A

TITLE: OPTICAL IMMONOASSAY AND REAGENT THEREFOR

PUBN-DATE: October 1, 1996

## INVENTOR-INFORMATION:

NAME	COUNTRY
NIRAZUKA, SADANOBU	
TANAKA, SEIJI	
HAMANO, AKISHIGE	



INT-CL (IPC): G01 N 33/544; G01 N 33/577

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	---------

☐ 8. Document ID: JP 2004511426 W, WO 200182899 A2, AU 200166272 A, US 20020034537 A1, EP 1278512 A2, CZ 200203913 A3, HU 200301835 A2

L4: Entry 8 of 10

File: DWPI

Apr 15, 2004

DERWENT-ACC-NO: 2002-089716

DERWENT-WEEK: 200426

COPYRIGHT 2004 DERWENT INFORMATION LTD

TITLE: Composition for targeting therapeutic, diagnostic and imaging agents to accumulate in the vicinity of activated vascular sites comprises an imaging agent or active ingredients and a carrier

INVENTOR: BIRO, C; DELLIAN, M ; MICHAELIS, U ; NAUJOKS, K W ; SAUER, B ; SCHULZE, B ; TEIFEL, M

PRIORITY-DATA: 2000US-201673P (May 3, 2000), 2001US-0847538 (May 3, 2001)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>JP 2004511426 W</u>	April 15, 2004		227	A61K009/127
<u>WO 200182899 A2</u>	November 8, 2001	E	084	A61K009/127
<u>AU 200166272 A</u>	November 12, 2001		000	
<u>US 20020034537 A1</u>	March 21, 2002		000	A61K039/395
<u>EP 1278512 A2</u>	January 29, 2003	E	000	A61K009/127
<u>CZ 200203913 A3</u>	September 17, 2003		000	A61K009/127
<u>HU 200301835 A2</u>	September 29, 2003		000	A61K009/127

INT-CL (IPC): A61 K 9/107; A61 K 9/127; A61 K 9/14; A61 K 39/395; A61 K 47/18; A61 K 47/42; A61 K 47/48; A61 K 49/00; A61 K 49/18; A61 K 51/12; A61 P 17/02; A61 P 19/02; A61 P 35/00

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	---------

☐ 9. Document ID: EP 410848 A, FR 2650181 A, CA 2022033 A, EP 410848 B1, DE 69005555 E, US 5290563 A, ES 2062446 T3

L4: Entry 9 of 10

File: DWPI

Jan 30, 1991

DERWENT-ACC-NO: 1991-031199

DERWENT-WEEK: 200151

COPYRIGHT 2004 DERWENT INFORMATION LTD

TITLE: Incorporation of allergenic material into liposome(s) - with positive or negative lipid, at controlled acidity

INVENTOR: MILLET-GENIN, I; PUISIEUX, F ; ROBLOT-TREUPEL, L ; THAO, T X ; MILLETGENI, I ; ROBLOTTREU, L

PRIORITY-DATA: 1989FR-0010129 (July 27, 1989)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 410848 A	January 30, 1991	E	008	
FR 2650181 A	February 1, 1991		000	
CA 2022033 A	January 28, 1991		000	
EP 410848 B1	December 29, 1993	F	010	A61K009/127
DE 69005555 E	February 10, 1994		000	A61K009/127
US 5290563 A	March 1, 1994		005	A61K037/22
ES 2062446 T3	December 16, 1994		000	A61K009/127

INT-CL (IPC): A61K 9/12; A61K 9/127; A61K 37/22; A61K 39/35

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	KWIC	Draw D
------	-------	----------	-------	--------	----------------	------	-----------	----------	-------------	--------	------	--------

☐ 10. Document ID: US 4944948 A

L4: Entry 10 of 10

File: DWPI

Jul 31, 1990

DERWENT-ACC-NO: 1990-253522

DERWENT-WEEK: 199033

COPYRIGHT 2004 DERWENT INFORMATION LTD

TITLE: Sustained release epidermal growth factor compsn. - contg. liposomes and having high viscosity due to presence of zwitterionic cpd. or empty liposomes

INVENTOR: FIELDING, R M; MARTIN, F J ; USTER, P S

PRIORITY-DATA: 1989US-0315392 (February 24, 1989)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 4944948 A	July 31, 1990		000	

INT-CL (IPC): A61K 37/22

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	KWIC	Draw D
------	-------	----------	-------	--------	----------------	------	-----------	----------	-------------	--------	------	--------

Clear	Generate Collection	Print	Fwd Refs	Bkwd Refs	Generate OACS
-------	---------------------	-------	----------	-----------	---------------

Terms	Documents
(isoelectric adj1 point) adj10 liposome	10

Display Format:  [Previous Page](#)[Next Page](#)[Go to Doc#](#)

[First Hit](#) [Fwd Refs](#)[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

Generate Collection

Print

L5: Entry 13 of 65

File: USPT

Oct 5, 1999

DOCUMENT-IDENTIFIER: US 5962015 A

TITLE: Stabilized liposomes

Brief Summary Text (8):

Accordingly, there have been many proposals for stabilizing liposomes. Known stabilizers for liposomes include certain relatively simple amphoteric molecules having a cationic region, for example triethanolamine, a common cosmetic buffer, can be added to phospholipid starting materials during liposome preparation to prevent aggregation. Though providing some stability, triethanolamine and the like, do not provide adequate shelf-life and processing stability to enable liposomes to protect actives in a wide range of cosmetic and pharmaceutical formulations.

[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

[First Hit](#) [Fwd Refs](#)[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

Generate Collection

Print

L5: Entry 13 of 65

File: USPT

Oct 5, 1999

US-PAT-NO: 5962015

DOCUMENT-IDENTIFIER: US 5962015 A

TITLE: Stabilized liposomes

DATE-ISSUED: October 5, 1999

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Delrieu; Pascal	Castanet Tolosan			FR
Ding; Li	Castanet Tolosan			FR

US-CL-CURRENT: 424/450; 424/401

## CLAIMS:

We claim:

1. A method of encapsulating a high proportion of water soluble active agent in liposomes comprising mixing together:

- a) a liposome-forming structural material;
- b) an effective proportion of a quaternized polysaccharide stabilizing agent; and
- c) an effective proportion of a water-soluble active ingredient dissolved in sufficient of an aqueous medium to provide a dispersion medium for the liposomes;

and homogenizing the mixture to form liposomes wherein the quaternized polysaccharide agent is present in the liposomal membrane, providing support to the liposome-forming material to hold the liposome together and wherein the dissolved active ingredient is encapsulated in the liposomes.

2. A stabilized, aqueous dispersion of liposomes wherein the liposomes comprise, as structural components of individual liposomes:

- a) an amphiphilic liposome-forming material; and
- b) a sufficient proportion of a quaternized polysaccharide stabilizing agent to stabilize the liposome dispersion against agglomeration;

wherein the quaternized polysaccharide agent is present in the liposomal membrane and provides support to the liposome-forming material to hold the liposome together.

3. A dispersion of liposomes according to claim 2 wherein the stabilizing agent comprises a quaternized cellulose having an average molecular weight of at least 50,000 daltons, the quaternary group having an alkyl substituent of from 10 to 20 carbon atoms.
4. A dispersion of liposomes according to claim 2 wherein the quaternized cellulose has a degree of substitution of quaternary ammonium groups per saccharide unit of at least 0.5.
5. A dispersion of liposomes according to claim 2 wherein the quaternized polysaccharide comprises laurdimonium hydroxyethylcellulose, cocodimonium hydroxyethylcellulose or steardimonium hydroxyethylcellulose.
6. A dispersion of liposomes according to claim 2 wherein the proportion of quaternized polysaccharide to liposomes is from about 0.01 to about 0.5 parts polysaccharide per part of liposome, by weight.
7. A dispersion of liposomes according to claim 2 wherein the proportion of quaternized polysaccharide to liposomes is from about 0.05 to about 0.2 parts polysaccharide per part of liposome, by weight.
8. A dispersion of liposomes according to claim 2 wherein the amphiphilic liposome-forming material comprises a liposome membrane-forming lecithin.
9. A dispersion of liposomes according to claim 2 wherein the liposomes comprise from about 0.5 to 10 percent by weight of the composition.
10. A dispersion of liposomes according to claim 2 wherein the individual liposomes contain an aqueous solution of a cosmetically or biologically active ingredient.
11. A dispersion of liposomes according to claim 10 wherein the active ingredient is acidic.
12. A dispersion of liposomes according to claim 2 wherein the quaternized polysaccharide comprises laurdimonium hydroxyethylcellulose, cocodimonium hydroxyethylcellulose or steardimonium hydroxyethylcellulose, the proportion of quaternized polysaccharide to liposomes is from about 0.01 to about 0.5 parts polysaccharide per part of liposome, by weight, wherein the amphiphilic liposome-forming material comprises a liposome membrane-forming amphiphilic lecithin in a proportion of from about 0.5 to 10 percent by weight of the composition and wherein the individual liposomes contain an aqueous solution of an acidic cosmetically or biologically active ingredient.
13. A dispersion of liposomes according to claim 2 having a stability such that they exhibit a size increase of less than 20 percent after 60 days at 40.degree. C. and are substantially stable for at least 180 minutes at 80.degree. C.
14. A dispersion of liposomes according to claim 2 being stable to an acidic pH of at least as low as 4.5.
15. A cosmetic or pharmaceutical composition comprising an effective amount of a liposome composition according to claim 2, said liposome composition comprising an effective amount of an active ingredient.

16. A dispersion of liposomes according to claim 2 comprising:

- a) an aqueous medium;
- b) liposomes dispersed in the aqueous medium; and
- c) sufficient of a water-soluble quaternized polymer stabilizing agent to stabilize the liposomes against agglomeration the polymer having repeating units of the following general structure:

--[(backbone moiety).(O--R--OH).sub.2.(OR).sub.a R.sub.1 N.sup.+  
R.sub.2.R.sub.3.R.sub.4 X.sup.- ]--

wherein the backbone moiety is a unit of a polycarbohydrate, a polysaccharide, a vinyl alcohol polymer, or a copolymer of vinyl alcohol with vinyl acetate; R is methylene, ethylene, or propylene; R.sub.1 -R.sub.4 are hydrogen or alkyl groups having from 1 to 20 carbon atoms, at least one of which is alkyl; where a is from 0 to 20; and X.sup.- is an anion; wherein the degree of substitution of the hydroxy alkylene group per saccharide unit is at least 1.0; and the degree of substitution of the quaternary ammonium group per saccharide unit is at least about 0.5.

17. A dispersion of liposomes according to claim 2 wherein the liposome membrane forming compound has lipophilic portions and the stabilizing agent has sufficient lipophilic groups to anchor the lipophilic portions of the liposome membrane forming compound.

18. A dispersion of liposomes according to claim 2 exhibiting one or more of the following stability characteristics:

- i) an optically determined size increase of less than about 20 percent after 60 days at about 40.degree. C.;
- ii) an optical density increase of not more than 10 percent after 180 minutes at 80.degree. C.;
- iii) size stability to agitation for five minutes at a pH of 4.5;
- iv) size stability to 20 percent ethanol based upon the water content of the liposome dispersion; and
- v) size stability to 10 percent of a non-ionic surfactant based upon the water content of the liposome dispersion.

19. A dispersion of liposomes according to claim 2 having a stability providing an optical density increase of not more than 10 percent after 180 minutes at 80.degree. C. and size stability to agitation for five minutes at a pH of 4.5.

20. A dispersion of liposomes according to claim 19 having size stability to agitation for five minutes at a pH of 2.

21. A dispersion of liposomes according to claim 20 wherein the liposome-forming material is a lecithin and the stabilizing agent is an acylated quaternized polysaccharide.

22. A dispersion of liposomes according to claim 2 wherein the stabilizing agent provides each individual liposome with an external positive charge whereby neighboring liposomes tend to repel one another.

23. A method according to claim 1 wherein the stabilizing agent comprises a quaternized cellulose having an average molecular weight of at least 50,000 daltons, the quaternary group having an alkyl substituent of from 10 to 20 carbon atoms.

24. A method according to claim 1 wherein the proportion of stabilizing agent to liposomes is from about 0.01 to about 0.5 parts polysaccharide per part of liposome, by weight.

25. A method according to claim 1 wherein an aqueous solution of a cosmetically or biologically active ingredient is entrapped within the liposome particles.

[Previous Doc](#)

[Next Doc](#)

[Go to Doc#](#)

[First Hit](#) [Fwd Refs](#) [Previous Doc](#) [Next Doc](#) [Go to Doc#](#)

☐ [Generate Collection](#) [Print](#)

L5: Entry 50 of 65

File: USPT

May 16, 1989

US-PAT-NO: 4830857

DOCUMENT-IDENTIFIER: US 4830857 A

TITLE: Cosmetic and pharmaceutical compositions containing niosomes and a water-soluble polyamide, and a process for preparing these compositions

DATE-ISSUED: May 16, 1989

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Handjani; Rose M.	Paris			FR
Ribier; Alain	Paris			FR
Vanlerberghe; Guy	Villevaude			FR
Zabotto; Arlette	Paris			FR
Griat; Jacqueline	Ablon			FR

US-CL-CURRENT: 424/450; 264/4.1, 264/4.6, 424/417, 428/402.2

CLAIMS:

We claim:

1. A composition comprising a dispersion in an aqueous medium of spherules composed of one or more organized layers of lipid molecules, within which layers an internal aqueous phase is encapsulated, at least a part of said spherules being formed from layers consisting of at least one nonionic amphiphilic lipid, said lipid forming said organized layers of said spherules constituting 2 to 10 percent by weight of the total weight of the composition, wherein in said aqueous medium there is dissolved poly-beta-alanine having a molecular weight of between 1,000 and 200,000, the concentration of which is from 0.01 to 5 percent by weight relative to the total weight of the composition.
2. The composition of claim 1 wherein the relative proportion by weight of said nonionic amphiphilic lipid forming the walls of said spherules relative to said poly-beta-alanine is between 100 and 1.
3. The composition of claim 1 wherein said spherules are entirely niosomes.
4. The composition of claim 1 wherein spherules consist of nonionic lipids forming niosomes and ionic lipids forming liposomes.
5. The composition of claim 1 wherein said lipid forming said spherules has a lipophile/hydrophile ratio such that said lipid swells in said aqueous phase to form a lamellar phase, each lipophilic group of said lipid consisting of a chain containing from 12 to 30 carbon atoms.



6. The composition of claim 1 wherein said nonionic lipid forming said spherules has a hydrophilic group selected from the group consisting of a polyoxyethylenated group, a polyglycerolated group, a polyol ester group and an oxyethylenated polyol ester group.

7. The composition of claim 6 wherein said nonionic lipid forming said spherules is selected from the group consisting of

(1) linear or branched polyglycerol ethers of respective formulae: ##STR7## wherein n is an integer between 1 and 6, and R is a saturated or unsaturated linear or branched aliphatic chain containing from 12 to 30 carbon atoms, the hydrocarbon radicals of lanolin alcohols or the 2-hydroxyalkyl residues of long-chain alpha-diols,

(2) polyoxyethylenated fatty alcohols,

(3) polyoxyethylenated sterols,

(4) polyol esters,

(5) oxyethylenated polyol esters and

(6) glycolipids of natural or synthetic origin.

8. The composition of claim 7 wherein said nonionic lipid forming said spherules is a polyoxyethylenated ester of sorbitol.

9. The composition of claim 1 which also includes at least one of a long-chain alcohol or diol, a sterol, a long-chain amine or quaternary ammonium derivative thereof, a hydroxyalkylamine, a polyoxyethylenated fatty amine, a long-chain amino alcohol ester or a salt or quaternary ammonium derivative thereof, a phosphoric ester of a fatty alcohol, an alkyl sulphate or an ionic derivative of a sterol.

10. The composition of claim 1 wherein said aqueous phase encapsulated within said spherules is an aqueous solution of a cosmetically or pharmaceutically active substance.

11. The composition of claim 10 wherein the encapsulated aqueous phase is isoosmotic with respect to the phase which surrounds said spherules.

12. The composition of claim 1 wherein the aqueous phase surrounding said spherules contains at least one liquid phase immiscible with water and dispersed in said aqueous phase.

13. The composition of claim 12 wherein the amount of liquid phase immiscible with water is between 2 and 40 percent by weight relative to the total weight of said composition and the relative proportion by weight of amphiphilic lipid constituting said spherules relative to said dispersed liquid phase immiscible with water is between 0.2 and 1.

14. The composition of claim 12 wherein said dispersed liquid phase immiscible with water is an oil, a hydrocarbon, a halocarbon, a polysiloxane, an inorganic acid ester, an ether or a polyether.

15. The composition of claim 14 wherein said oil is selected from the group consisting of an ester of a fatty acid and a polyol and an ester of a fatty acid and a branched alcohol having the formula  $R-COOR'$  wherein R is a residue of a higher fatty acid containing 8 to 20 carbon atoms and R' is a branched hydrocarbon chain containing 3-20 carbon atoms.

16. The composition of claim 14 wherein said dispersed liquid phase immiscible with water is hexadecane, liquid paraffin, perhydrosqualene, perfluorotributylamine or perfluorodecahydronaphthalene.

17. The composition of claim 1 for use in cosmetics wherein said aqueous medium in which said spherules are dispersed also includes an opacifier, a gelifying agent, an aroma, a perfume, a sunscreen or a colorant.

18. The composition of claim 1 for use as a cosmetic wherein said internal aqueous phase contains a humectant, artificial suntanning agent, water-soluble agent for protection against sunlight, antiperspirant, deodorant, astringent, freshening product, tonic product, healing product, keratolytic product, depilatory product, perfumed water, water-soluble colorant, anti-dandruff agent, antiseborrheic agent, oxidizing agent, reducing agent or an extract from animal or plant tissues.

19. The composition of claim 1 for use as a pharmaceutical wherein said internal aqueous phase contains a vitamin, hormone, enzyme, vaccine, anti-inflammatory agent, antibiotic or bactericide.

20. A process for preparing a composition according to claim 1 comprising:

in a first stage preparing a dispersion in an aqueous medium of spherules composed of one or more organized layers of lipid molecules, within which layers an internal aqueous phase is encapsulated, at least a part of said spherules being formed from layers consisting of at least one nonionic amphiphilic lipid, the lipid which forms the organized layers of said spherules constituting from 2 to 10 percent by weight of the total weight of the composition, and

in a second stage adding said poly-beta-alanine to form the aqueous phase surrounding said spherules, and mixing by vigorous mechanical agitation.

21. The process of claim 20 which includes, after adding said poly-beta-alanine and before mixing, the step of adding a liquid immiscible with water.

22. The process of claim 21 wherein said liquid immiscible with water contains a dissolved adjuvant.

23. The process of claim 20 wherein said agitation is carried out at a temperature ranging from 10.degree. C. to 50.degree. C.

24. The process of claim 20 for the preparation of a composition in which the aqueous phase surrounding said spherules contains an adjuvant, said process comprising introducing said adjuvant before, after or at the same time as said poly-beta-alanine is added.

25. The process of claim 20 wherein the dispersion of spherules contains a plurality of different types of spherules and said process comprises separately preparing each type of spherule dispersion and thereafter mixing

together said separately prepared dispersions.

26. The process of claim 25 wherein the separately prepared dispersions are mixed prior to adding said poly-beta-alanine.

27. The process of claim 20 for preparing a composition comprising multilamellar spherules, said process comprising in said first stage contacting said lipid intended for the formation of the layers of said spherules with the aqueous phase to be encapsulated within said spherules, the ratio of the lipophilic portion/hydrophilic portion of said lipid being such that the latter swells in the said aqueous phase to be encapsulated so as to form a lamellar phase, agitating the resulting mixture such that mixing takes place and a lamellar phase is obtained, adding the aqueous dispersion medium in an amount greater than the amount of lamellar phase obtained and vigorously shaking the mixture for a period of time ranging from about 15 minutes to 3 hours.

28. The process of claim 20 for preparing a composition comprising unilamellar spherules, said process comprising in said first stage, solubilizing said lipid intended for the formation of said spherules in at least one solvent insoluble in water and packaging the resulting lipid solution in the liquid state in a container at a pressure  $P_{sub.1}$  and at a temperature  $\bar{\cdot}$ <sub>sub.1</sub> ; preparing an aqueous phase containing dissolved substances to be encapsulated in said spherules and packaging the resulting aqueous phase at a pressure  $P_{sub.2}$  and at a temperature  $\bar{\cdot}$ <sub>sub.2</sub> ; and injecting said lipid solution into said aqueous phase at a low rate of flow initially to form droplets such that the solvent in said lipid solution vaporizes when it comes into contact with said aqueous phase, the pressure  $P_{sub.2}$  being less than the pressure  $P_{sub.1}$  and being less than the vapor pressure of the solvent in the droplets at the temperature  $\bar{\cdot}$ <sub>sub.2</sub>.

29. A method for the therapeutic treatment of the human or animal body comprising administering the composition of claim 1 to a human or animal body.

30. A method for the cosmetic treatment of the human or animal body comprising administering the composition of claim 1 to said human or animal body.

[Previous Doc](#)

[Next Doc](#)

[Go to Doc#](#)